

WHAT IS CLAIMED IS:

1 1. A method of etching a substrate in the manufacture of a device,
2 said method comprising steps of:

3 placing a substrate having a film thereon on a substrate holder in a
4 chamber, said substrate holder having a selected thermal mass; and

5 performing a first etching of a first portion of said film at a first
6 temperature and performing a second etching of a second portion of said film at a
7 second temperature, said first temperature being different from said second
8 temperature;

9 wherein said selected thermal mass allows a change from said first
10 temperature to said second temperature within a characteristic time period to process
11 said film.

1 2. The method of claim 1 wherein said first temperature is changed to
2 said second temperature by a heat transfer means coupled to said substrate holder.

1 3. The method of claim 1 wherein said change in temperature is an in-
2 situ process during said first etching step and said second etching step.

1 4. The method of claim 1 wherein said first etching and said second
2 etching are conducted in a substantially constant plasma environment.

1 5. The method of claim 1 wherein said first temperature is higher than
2 said second temperature.

1 6. The method of claim 1 wherein said first temperature is lower than
2 said second temperature.

1 7. The method of claim 1 wherein said first etching comprises
2 radiation.

1 8. The method of claim 1 wherein said second etching comprises
2 radiation.

3 9. The method of claim 1 wherein said first etching is an ion
4 bombardment aided process.

1 10. The method of claim 1 wherein said second etching is an ion
2 bombardment aided process.

1 11. The method of claim 1 wherein said first portion of said film is
2 etched before said second portion of said film.

1 12. The method of claim 1 wherein said second portion of said film is
2 etched before said first portion of said film.

1 13. Apparatus for etching a substrate in the manufacture of a device,
2 said apparatus comprising:
3 a chamber;
4 a substrate holder disposed in said chamber, said substrate holder
5 having a selected thermal mass;
6 wherein said selected thermal mass of said substrate holder allows for
7 a change from a first temperature to a second temperature within a characteristic time
8 period to process a film.

1 14. Apparatus of claim 13 further comprising a heat transfer means
2 for changing said first temperature to said second temperature, said heat transfer
3 means being coupled to said substrate holder.

1 15. Apparatus of claim 13 wherein said change in temperature is an
2 in-situ process within said characteristic time.

1 16. Apparatus of claim 13 wherein said chamber provides a
2 substantially constant plasma environment.

1 17. Apparatus of claim 13 wherein said first temperature is higher
2 than said second temperature.

1 18. Apparatus of claim 13 wherein said first temperature is lower than
2 said second temperature.

1 19. Apparatus of claim 13 wherein said chamber provides radiation.

1 20. Apparatus of claim 13 wherein said chamber provides an ion
2 bombardment aided process.